

**SECTION 07500****BUILT-UP BITUMINOUS ROOFING AND SHEET METAL  
OVER LIGHTWEIGHT INSULATING CONCRETE SUBSTRATE  
OR STRUCTURAL CONCRETE DECK****PART 1 - GENERAL****1.01 SCOPE OF WORK**

- A. Furnish all materials, equipment, labor, supervision and all incidentals necessary to complete all built-up bituminous roofing and sheet metal or structural concrete deck, as shown and indicated on the contract drawings and/or specified herein, including, but not limited the following:
- 1) All roofing materials, including, but not limited to base sheet, roofing felts, bitumen, roof vents and aggregate surfacing.
  - 2) All insulation and flashing.
  - 3) All counter-flashing, eaves, stripping and other sheet metal work in conjunction with roofing.
  - 4) The roofing may be of heavier construction than specified herein, but in no case shall be less.

**1.02 RELATED SECTIONS**

Section 03521- Insulating Concrete Fill

**1.03 SUBMITTALS:**

- A. Submit as shop drawings to the Engineer of Record for all sheet metal work. No fabrication shall be begun until shop drawings are reviewed. Drawings shall show metal gage, configuration joint spacing, cover plates, anchorage, etc.
- B. Submit manufacturer's cut sheet of all factory manufactured items.
- C. Submit list of actual roofing materials proposed to be used.
- D. Submit Roof Guarantees: Roof warranties shall be submitted within 30 days after roofing is completed. Roofing manufacturer shall issue a 20 year guarantee. Roofing contractor shall issue a minimum 3 year guarantee.
- E. Submit Dade County Product Approval number and test verification of the roofing system proposed, verify that the roofing assembly is the correct one for the application. No deviations in materials will be permitted from the Product Control Sheets and Uniform Building Permit Roofing Assembly

- F Submit copy of Permit to Engineer.
- G. Roofing Applicator Requirements:
  - 1. Furnish the Engineer of Record a letter with the following information prior to the start of any roofing work:
    - a. Letter from manufacturer to certify the competency of the Contractor. Roofing contractor shall be approved by the manufacturer.
    - b. The name of the roofing material manufacturer.
    - c. Agreement to have a qualified superintendent on the job at all times when roofing installation is in progress.
    - d. Provide a certification that roofing installer has been in business for a minimum of 5 years in this line of work and has documented successful installations similar to this project.
    - e. Provide a Notice of Intent to Issue Warranty from the Manufacturer.
    - f. Submit a tapered insulation layout.
  - 2. Furnish the Engineer with Acknowledgment letter from roofing contractor of notice of commencement.
    - a. Provide the Engineer of Record with Acknowledgment letter from the roofing contractor stating that the concrete roof deck has been thoroughly inspected by him and is suitable to receive roofing, and that he is proceeding with the roofing installation of the roofing system. No roofing work shall commence until this letter is received by the Engineer of Record

#### 1.04 ROOF DECK ACCEPTANCE

- A. The Contractor shall be responsible for checking all details relative to this phase of the work and advising the Engineer of Record, in writing, prior to starting work of any conditions or details which might prevent issuance of the guarantee specified herein. Starting of work without such notification indicates acceptance of all conditions and details and if changes are required, any additional costs for such changes shall be borne by the Contractor.
- B. The Contractor shall inspect all roof decks prior to starting work on that building and notify the Engineer of Record of any conditions which are not satisfactory for the execution of his work.

#### 1.05 MANUFACTURER:

Roofing materials shall be as manufactured by Tamko, Inc., GAF, or approved equal. Roofing system selected has to be an approved assembly for the application, height, and uplift required in accordance with Dade County Product Control, the South Florida Building Code, and ASCE 7 (1988 Edition).

## 1.06 QUALITY ASSURANCE

- A. All roofing components shall be labeled and/or identified as mandated by the South Florida Building Code (SFBC) Chief Code Compliance Officer.
- B. UL Approval: Materials and roofing system provided shall have been tested, listed, and labeled by UL for a Class A rating at design slope. Submit copy of current rating listing from UL Directory (1997 edition).
- C. The roofing assembly shall meet Factory Mutual requirements for uplift in accordance with FM 1-180.
- D. All roofing and materials shall be installed in strict accordance with the manufacturer's recommendations, Dade County Product Approval of Roofing Assembly, South Florida Building Code, ASCE 7 (based on the 1988 edition), and the Uniform Building Permit for the approved roofing assembly, whichever requirements are more stringent.
- E. Bitumens, felts, flashing, and all components of the roof shall be the products of the same manufacturer or all materials used within the system shall be approved by the manufacturer.
- F. A pre-roofing conference shall be held by the Contractor where all the persons concerned shall be in attendance including but not limited to the Contractor's Project Manager, the superintendent, the roofing contractor, supplier, WASD inspector, the Engineer of Record, the roofing manufacturer's representative, and any other business concern or trade related to the installation of the roofing and the provision of guarantees. Furnish the Engineer of Record with a copy of the minutes of the pre-roofing conference reflecting any issues discussed and decisions made.

## 1.07 GUARANTEE

- A. The Contractor shall furnish a manufacturer's 20-year non-prorated, no dollar limit, roofing guarantee, from date of acceptance, on the entire roofing system, including both materials and workmanship and associated work specified in this section, agreeing to repair or replace work which leaks water, deteriorates or otherwise fails (due to failures of materials or workmanship) to perform as roofing and providing a waterproof, watertight roofing system.
- B. The roofing contractor shall provide the Department with a separate 3-year, zero cost to Owner no-dollar limit, roofing guarantee for a period from date of acceptance on the entire roofing system including both materials and workmanship and associated work specified in this section, agreeing to repair or replace work which leaks water, deteriorates or otherwise fails (due to failures of materials or workmanship) to perform as a watertight and waterproof roofing system.

- C. All written guarantees to the Engineer shall state that:
1. All roofing and materials herein specified have been installed in strict accordance with the manufacturer's recommendations, Dade County Product Approval of Roofing Assembly, South Florida Building Code, ASCE 7 (based on the 1988 edition), and the Uniform Building Permit for the approved roofing assembly, whichever requirements are more stringent.
  2. Certify that the roofing assembly as installed is approved by Dade County Product Control and meets the requirements for the height of roof, uplift, attachment or fastening methods, edge conditions, field, perimeter, corners, and related details.
  3. All roofing repairs or replacements during the specified period will be performed at no additional cost to the Department, and in accordance with the South Florida Building Code, ASCE 7 requirements, and these specifications, whichever is more stringent.
  4. All roofing materials used and listed are covered by the manufacturer under the guarantee.
  5. All roofing material and appurtenances, including flashing material, shall be covered by the manufacturer's guarantee.

## **PART 2 - PRODUCTS**

### 2.01 MATERIALS:

- A. General: The minimum acceptable roofing shall consist of a glass base ply felt secured to structural base and fastened in the manner tested for the required wind uplift at the design height, followed by three overlapping plies of fiberglass roofing felts, each of which shall be separated by a layer of hot mopped-on asphalt, followed by a layer of cap sheet surfaced with mineral granules applied hot. All edges and flashing and roofing system assembly shall be as shown on the approved Plans and as required by the South Florida Building Code.
- B. Roofing materials:
1. Base Felt: ASTM D 3672, Type II and ASTM-D4897, Type II, "Specification for Asphalt Coated Glass Venting Base Sheet Used in Roofing." Minimum 60 pounds per square.
  2. Ply Felts (3 plies): ASTM D2178, "Specification for Asphalt Glass (Felt) Used in Roofing and Waterproofing", Type VI. Minimum 11 pounds per square each ply.
  3. Cap Sheet: ASTM D3909, "Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules", ULG3. Minimum 76 pounds per square.

4. Concrete Primer: ASTM D41 "Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing". Penetrating asphalt coating to promote adhesion of subsequent coatings.
  5. Asphalt: ASTM D312 "Specification for Asphalt Used in Roofing", Type III, minimum 30 pounds per square ply, and 60 pounds per square for flood coat. Obtain proper temperature from asphalt manufacturer.
  6. Cant strips: Provide pressure treated wood, termite proofed, preformed to 45 degree angle or configuration detailed.
  7. Flashing Cement: ASTM D2822 "Specification for Asphalt Roof Cement."
  8. Crickets: Tapered perlite insulation to meet ASTM C 728 and FS HH-I-1972. Roofing Contractor shall provide a tapered insulation layout.
- C. Sheet metal, flashing and counter-flashing: anodized as per Aluminum Association AA-M10C11C21A42.
- 1) Reglet: Fry Reglet PVC (Polyvinyl Chloride) plastic .060-inch thick, highest quality, high impact, rigid, Type II
  - 2) Roof Flashing: Metal roof flashings .047" (18 ga.) clear anodized aluminum.
  - 3) Overflow scuppers: .047" clear anodized aluminum.
  - 4) Lead Flashings: Hard type, at least 7 oz. per square foot and conforming to the requirements of "Standard Specification for Sheet Lead" as issued by the Lead Industries Association.
  - 5) Downspouts: .047" (18 ga.) thick clear anodized aluminum, size and shape detailed.
- D. Provide all accessories or other items essential to completion of sheet metal installation of same kind of material as item to which applied. Nails, screws and bolts shall be of type and of a composition that is compatible with metal which it will contact. Systems specified above shall be installed as recommended by manufacturer and as detailed. Use factory formed interior and exterior corners.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL:**

- A. Perform all work in accordance with manufacturer's recommendations and guarantee requirements.
- B. It is mandatory that the manufacturer's inspection agent, the Department Inspector, and the Contractor's representative shall make a thorough inspection prior to and during the roofing application and at final completion of the roofing system.

- C. The roofing contractor will either accept or reject the roof deck in writing to the Engineer of Record and the roofing manufacturer.

### 3.02 INSTALLATION AND FABRICATION

- A. Prior to application of any roofing materials, the finished concrete surface shall be inspected and accepted by the roofing material manufacturer which will issue the a 20 year guarantee on the finished roof, as being in a proper condition to receive roofing. This acceptance shall be in writing to the attention of the Engineer of Record, and must be received by him before any roofing work will be permitted.
- B. Clean structural subsurface until smooth and free of laitance. Prime uniformly with asphalt primer at a rate of not less than recommended by the roofing manufacturer. The installation of cants, nailers, metal fittings, penetrations, and similar items affecting the roofing shall be completed before roofing work begins. Install base flashings according to roofing manufacturer's recommendations, as necessary to obtain guarantee, and in accordance with Dade County Product Approval, whichever requirements are more stringent.
- B. Starting at the low point, apply one ply of Base Sheet over the entire surface, lapping each sheet 2-inches minimum over the underlying sheet. Lap ends 6-inches minimum. Drive approved fasteners along the lap at maximum spacing as indicated on Dade County Product Approval and FM Data sheets for the design height, slope, and uplift, whichever requirement is more stringent. All edges and flashings shall be shown on the approved Plans. Assembly and details shall be in accordance with the Product Control Approval and as required by the South Florida Building Code.
- C. Starting at low point, embed 4 plies (a base plus three plies) of Asphalt Glass Ply Sheets in uniform mopping of hot asphalt (minimum 30 pounds per ply per square). Use starting strips cut 1/4, 1/2 and 3/4 of a full sheet followed by a full width sheet. Lap each sheet 28-inches over the preceding sheet and embed full width of sheet in a coating of hot asphalt (minimum 30 pounds per ply per square) so that felt does not touch felt. Lap ends 6-inches minimum. Broom in ply sheets with a soft broom or squeegee. Stagger end of successive courses of felts a minimum of three feet apart.
- D. Starting at low point, embed one ply of mineral surface cap sheet in a uniform mopping of hot asphalt (minimum 30 pounds per ply per square). Lap ends 6-inches minimum. Keep lap ends of successive courses at least 3-feet apart.
- E. Extend roofing sheets up face of cant minimum 2-inches and cut off evenly at wall line.
- F. Emergency overflow linings: fabricate to details on drawings with minimum 4" flashing flanges unless otherwise indicated. Install as detailed/noted.
- G. Apply felts smoothly, free of air pockets, wrinkles, fishmouths, lap joints, or tears. Repairs all fishmouths in accordance with NRCA Roofing Manual.
- H. Dissimilar materials: Isolate wood and concrete or other materials from contact with aluminum surfaces (if any) by coating with bituminous base paint.

- I Parapet and wall reglet/counter-flashing systems:
- 1) Install counter-flashing and reglet systems according to roof details shown on Drawings, unless revision is authorized by the Engineer of Record.
  - 2) Make provisions for metal work to expand and contract without losing watertight fit.
- J. Metal flashing for bases and curbs:
1. Fabricate from flat sheet to detail and extend vertical down over base flashing a minimum of 4 inches.
  2. Extend over top of curbs and set in plastic cement and nail at 3 inches o.c.
  3. Where bolted connections puncture flashing provide 4 pound sheet lead washers, 2 inches larger than bolt holes.
- K. Downspouts:
1. Fabricate to size noted/shown on Drawings in 8" to 10" lengths. Telescope vertical joints 2" and lock longitudinal joints. Fasten to walls/columns with heavy straps or clamps spaced 6 feet apart.
  2. Fit downspout into iron boots or drain pipes where indicated. Caulk and cement joints neatly.
  3. Close tops of downspout heads with removable ½" mesh aluminum wire screens cups.
- L. Pitch pans shall be permitted only at locations where Engineer's written approval has been granted.
- M. Plumbing vents:
- Install lead flashings for vents and drains.
- N. Workmanship - metals:
- All joints neatly constructed: items properly and substantially secured and made completely watertight using best possible materials, methods and workmanship.

### 3.03 PROTECTION OF ADJACENT SURFACES

- A. Keep all surfaces and areas progressively clean. Protect walls, parapets and other surfaces from defacement by bitumens or other materials.
- B. Clean off/repair immediately any defacements to approval of Engineer of Record.

C. Where work must continue over finished roof membrane, protect surfaces.

3.04 CLEAN-UP

- A. At completion of all work required by this section, remove from premises all debris of any nature resulting from roofing, associated sheet metal and related work as well as all tools, equipment and unused materials.
- B. "Walk" roofs and remove all trash and extraneous matter/materials. Leave all finished roof surfaces clean.
- C. Check all emergency overflows. Make certain they are "open" and not blocked in any way.
- D. Check roof drains. Remove any gravel or debris from flanges, gutters and strainers.
- E. Test downspouts/gutters with hose water to insure freedom from stoppage/blockage.

END OF SECTION